AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (canceled).

2. (previously presented): Method according to claim 59 wherein the two three-dimensional images comprise a first three-dimensional simulated image showing the endovascular prosthesis deployed, taking into account the resistance of the lesion, and a second three-dimensional simulated image showing the enlarged lesion following the deployment of the endovascular prosthesis.

3. (original): Method according to claim 2, wherein the first three-dimensional simulated image showing the endovascular prosthesis deployed is obtained from a model of the implant.

4. (original): Method according to claim 3, wherein the model of the implant is obtained from the mechanical characteristics of the prosthesis or from characteristics of the prosthesis and a three-dimensional image of the contracted prosthesis.

5. (original): Method according to one of claim 2, wherein the second three-dimensional simulated image showing the enlarged lesion is obtained from a model of the lesion.

6. (original): Method according to one of claim 3, wherein the second three-dimensional simulated image showing the enlarged lesion is obtained from a model of the lesion.

7. (original): Method according to one of claim 4, wherein the second three-dimensional simulated image showing the enlarged lesion is obtained from a model of the lesion.

8. (original): Method according to claim 2, wherein the model of the lesion is obtained from the composition and biomechanical properties of the blood vessels and surrounding atheromatous plaques and from a three-dimensional image of the lesion.

9. (original): Method according to claim 3, wherein the model of the lesion is obtained from the composition and biomechanical properties of the blood vessels and surrounding atheromatous plaques and from a three-dimensional image of the lesion.

10. (original): Method according to claim 4, wherein the model of the lesion is obtained from the composition and biomechanical properties of the blood vessels and surrounding atheromatous plaques and from a three-dimensional image of the lesion.

11. (original): Method according to claim 5, wherein the model of the lesion is obtained from the composition and biomechanical properties of the blood vessels and surrounding atheromatous plaques and from a three-dimensional image of the lesion.

12. (original): Method according to claim 3, wherein, for particular parameters concerning the deployment technique, the lesion and the vascular prosthesis, the biomechanical properties of the lesion are taken into account to execute the model of the prosthesis in order to obtain a three-dimensional image of the prosthesis deployed, and then to execute the model of the lesion in order to obtain a three-dimensional image of the enlarged lesion.

13. (original): Method according to claim 4, wherein, for particular parameters concerning the deployment technique, the lesion and the vascular prosthesis, the biomechanical properties of the lesion are taken into account to execute the model of the prosthesis in order to obtain a three-dimensional image of the prosthesis deployed, and

then to execute the model of the lesion in order to obtain a three-dimensional image of the enlarged lesion.

14. (original): Method according to claim 5, wherein, for particular parameters concerning the deployment technique, the lesion and the vascular prosthesis, the biomechanical properties of the lesion are taken into account to execute the model of the prosthesis in order to obtain a three-dimensional image of the prosthesis deployed, and then to execute the model of the lesion in order to obtain a three-dimensional image of the enlarged lesion.

15. (original): Method according to claim 6, wherein, for particular parameters concerning the deployment technique, the lesion and the vascular prosthesis, the biomechanical properties of the lesion are taken into account to execute the model of the prosthesis in order to obtain a three-dimensional image of the prosthesis deployed, and then to execute the model of the lesion in order to obtain a three-dimensional image of the enlarged lesion.

16. (original): Method according to claim 7, wherein, for particular parameters concerning the deployment technique, the lesion and the vascular prosthesis, the biomechanical properties of the lesion are taken into account to execute the model of the prosthesis in order to obtain a three-dimensional image of the prosthesis deployed, and then to execute the model of the lesion in order to obtain a three-dimensional image of the enlarged lesion.

17. (original): Method according to claim 8, wherein, for particular parameters concerning the deployment technique, the lesion and the vascular prosthesis, the biomechanical properties of the lesion are taken into account to execute the model of the prosthesis in order to obtain a three-dimensional image of the prosthesis deployed, and then to execute the model of the lesion in order to obtain a three-dimensional image of the enlarged lesion.

18. (original): Method according to claim 9, wherein, for particular parameters concerning the deployment technique, the lesion and the vascular prosthesis, the biomechanical properties of the lesion are taken into account to execute the model of the prosthesis in order to obtain a three-dimensional image of the prosthesis deployed, and then to execute the model of the lesion in order to obtain a three-dimensional image of the enlarged lesion.

19. (original): Method according to claim 10, wherein, for particular parameters concerning the deployment technique, the lesion and the vascular prosthesis, the biomechanical properties of the lesion are taken into account to execute the model of the prosthesis in order to obtain a three-dimensional image of the prosthesis deployed, and then to execute the model of the lesion in order to obtain a three-dimensional image of the enlarged lesion.

20. (original): Method according to claim 3, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

21. (original): Method according to claim 4, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

22. (original): Method according to claim 5, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

23. (original): Method according to claim 6, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

24. (original): Method according to claim 7, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

25. (original): Method according to claim 8, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

26. (original): Method according to claim 9, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

27. (original): Method according to claim 10, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

28. (original): Method according to claim 11, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

29. (original): Method according to claim 12, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

30. (original): Method according to claim 13, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

31. (original): Method according to claim 14, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

32. (original): Method according to claim 15, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

33. (original): Method according to claim 16, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

34. (original): Method according to claim 17, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

35. (original): Method according to claim 18, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

36. (original): Method according to claim 5, wherein the model of the lesion is established by means of the finite-element method.

37. (original): Method according to claim 6, wherein the model of the lesion is established by means of the finite-element method.

38. (original): Method according to claim 7, wherein the model of the lesion is established by means of the finite-element method.

39. (original): Method according to claim 8, wherein the model of the lesion is established by means of the finite-element method.

40. (original): Method according to claim 9, wherein the model of the lesion is established by means of the finite-element method.

41. (original): Method according to claim 10, wherein the model of the lesion is established by means of the finite-element method.

42. (original): Method according to claim 11, wherein the model of the lesion is established by means of the finite-element method.

43. (original): Method according to claim 12, wherein the model of the lesion is established by means of the finite-element method.

44. (original): Method according to claim 13, wherein the model of the lesion is established by means of the finite-element method.

45. (original): Method according to claim 14, wherein the model of the lesion is established by means of the finite-element method.

46. (original): Method according to claim 15, wherein the model of the lesion is established by means of the finite-element method.

47. (original): Method according to claim 16, wherein the model of the lesion is established by means of the finite-element method.

48. (original): Method according to claim 17, wherein the model of the lesion is established by means of the finite-element method.

49. (original): Method according to claim 18, wherein the model of the lesion is established by means of the finite-element method.

50. (original): Method according to claim 19, wherein the model of the lesion is established by means of the finite-element method.

51. (original): Method according to claim 20, wherein the model of the lesion is established by means of the finite-element method.

52. (original): Method according to claim 21, wherein the model of the lesion is established by means of the finite-element method.

53. (original): Method according to claim 22, wherein the model of the lesion is established by means of the finite-element method.

54. (original): Method according to claim 23, wherein the model of the lesion is established by means of the finite-element method.

55. (original): Method according to claim 24, wherein the model of the lesion is established by means of the finite-element method.

56. (cancelled):

57. (currently amended): A system to simulate in the course of an interventional operation, in order to ensure a desired result of the operation, the diameter enlargement of a lesion of a blood vessel comprising:

means for providing an endovascular prosthesis;

means for providing a computer equipped with data storage;

means for processing and display;

means for visualizing a three-dimensional simulated image showing the result of interaction between the lesion and the endovascular prosthesis after simulated deployment of the prosthesis, the three-dimensional simulated image being obtained by superposition of two three-dimensional images; ~~and~~

the means for providing a computer being optionally connected to a means for display;

means for interventionally deploying the prosthesis in the blood vessel at the lesion;

means for determining during intervention a composition of the lesion;

in response to the interventionally deployed prosthesis and the determined lesion composition during intervention, means for taking into account the instantaneous state of the endovascular prosthesis and shape of the lesion in order to further simulate and

visualize in three dimensions a future state of the endovascular prosthesis and of the lesion as a function of possible actions indicated by an operator;

thereby enabling in the course of the interventional operation, to take the present stage of operational parameters into account so that a simulated final state of the operation can be visualized.

58. (canceled).

59. (currently amended): A method for simulating in the course of an interventional operation, in order to ensure a desired result of the operation, the diameter enlargement of a lesion of a blood vessel by an endovascular prosthesis comprising:

determining a model ~~or parametric characteristics~~ of the lesion;

creating a three-dimensional image of the lesion from the model ~~or parametric characteristics~~;

determining a model ~~or parametric characteristics~~ of the prosthesis when in a non-deployed state;

creating a three-dimensional image of the prosthesis from the model ~~or parametric characteristics~~;

deploying via simulation the prosthesis into the blood vessel; ~~and~~

superimposing the deployed three-dimensional image of the prosthesis and the three-dimensional image of the lesion to provide a combined three-dimensional image to visualize via simulation the interaction or involvement between the lesion and the deployed prosthesis;

interventionally deploying the prosthesis in the blood vessel at the lesion;

using supplementary imaging, determining during intervention a composition of the lesion;

in response to the interventionally deployed prosthesis and the determined lesion composition during intervention, taking into account the instantaneous state of the endovascular prosthesis and shape of the lesion in order to further simulate and visualize

in three dimensions a future state of the endovascular prosthesis and of the lesion as a function of possible actions indicated by an operator;

thereby enabling in the course of the interventional operation, to take the present stage of operational parameters into account so that a simulated final state of the operation can be visualized.

60. (currently amended): A computer program embodied in a computer readable medium comprising program code that, when executed by a computer, causes the computer to perform a method for simulating in the course of an interventional operation, in order to ensure a desired result of the operation, the diameter enlargement of a lesion of a blood vessel by an endovascular prosthesis, the method comprising: ~~for implementing the method when the program code is read by a computer according to claim 59.~~

determining a model of the lesion;

creating three-dimensional image of the lesion from the model or parametric characteristics;

determining a model or parametric characteristics of the prosthesis when in a non-deployed state;

creating a three-dimensional image of the prosthesis from the model or parametric characteristics;

deploying via simulation the prosthesis into the blood vessel; and

superimposing the deployed three-dimensional image of the prosthesis and the three-dimensional image of the lesion to provide a combined three-dimensional image to visualize via simulatiion the interaction or involvement between the lesion and the deployed prosthesis;

interventionally deploying the prosthesis in the blood vessel at the lesion;

using supplementary imaging, determining during intervention a composition of the lesion;

in response to the interventionally deployed prosthesis and the determined lesion composition during intervention, taking into account the instantaneous state of the endovascular prosthesis and shape of the lesion in order to further simulate and visualize in three dimensions a future state of the endovascular prosthesis and of the lesion as a function of possible actions indicated by an operator;

thereby enabling in the course of the interventional operation, to take the present stage of operational parameters into account so that a simulated final state of the operation can be visualized.

61-63. (cancelled):